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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,447

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Xiao-Yuan Hou

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8958

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7590

03/25/2008

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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

03/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/810,447	<b>Applicant(s)</b> HOU ET AL.	
	<b>Examiner</b> Jimmy Lin	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 21-26 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 1-14 drawn to a nonelected invention in the reply filed on 11/7/2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (U.S. Patent No. 6,456,003) in view of Anthony et al. (U.S. Patent No. 6,437,040), Arora et al. (U.S. Publication No. 2002/0045007), and O'Connor et al. (U.S. Publication No. 2002/0172827).

Mori discloses a method of forming an organic electroluminescent (EL) element. Mori teaches that the electrodes for use in the organic EL device mainly use metal oxides or metals that are typically hydrophilic. On the other hand, the organic materials that are in contact with the electrodes in order to exchange and transport carriers are hydrophobic. Thus, the interface between the electrode/organic layers can not have a sufficient adhesion property (col. 4, lines 11-17). Mori teaches that an organic buffer layer can be used between the electrode and the organic layer to improve the adhesion therebetween (col. 6, lines 25-35). The organic buffer layer can be formed to a thickness of approximately 1-10 nm via a vacuum evaporation method (col. 8, lines 35-45). The organic EL element can comprise a substrate 31, anode 32, organic compound layer 33, hole transportation layer 34, light emission layer 35, electron transportation layer 36, organic compound layer 37, and cathode 38 (col. 12, lines 40-46; Fig. 4). The organic compound layers 33 and 37 are the organic buffer layers.

Mori teaches an organic buffer layer, but does not explicitly teach that the organic buffer can be a fatty acid having a chemical structure containing five to twenty carbon atoms.

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However, one of ordinary skill in the art would have recognized that some sort of adhesion promoter is necessary between the electrode and the organic layer and that compounds other than the specific materials as taught by Mori would be suitable so long as the buffer layer can enhance the adhesion between a hydrophobic surface and a hydrophilic surface. Accordingly, Anthony teaches that amphiphilic compounds (i.e., compounds exhibiting hydrophobic and hydrophilic properties) can be used to promote the adhesion between a hydrophobic surface and a hydrophilic surface (see col. 1-col. 7). Arora teaches a method of vacuum vapor deposition of an amphiphilic compound onto a substrate at a deposition rate of 0.1-1.0 nm/s. The vacuum pressure can be between  $10^{-4}$  to  $10^{-6}$  torr (i.e.,  $1.33 \times 10^{-2}$  to  $1.33 \times 10^{-4}$  Pa) (abstract; [0016],[0040]). In view of these teachings, it would have been obvious to one of ordinary skill in the art at the time of invention to have vapor deposited an amphiphilic compound as the particular organic buffer layer of Mori with a reasonable expectation of success because one of ordinary skill in the art would have recognized that other adhesion promoters would have been able to enhance the adhesion between a hydrophobic layer and a hydrophilic layer, because Anthony teaches that amphiphilic layers can achieve such results, and because Arora teaches that such layers can be deposited in accordance with the need of Mori.

Additionally, O'Connor teaches that sodium stearate (i.e., a fatty acid salt containing five to twenty carbon atoms) is a well-known amphiphilic compound [0024]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used sodium stearate as the particular amphiphilic compound of Mori, Anthony, and Arora with a reasonable expectation of success. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Mori, Anthony, Arora, and O'Connor do not explicitly teach that buffer layer forms a heat insulating media for preventing an uneven thermal expansion difference between the organic layer and the metallic layer. However, the references suggest the use of the same material as the claims and, thus, such a material must necessarily act as a heat insulating media.

Claim 22: Arora does not explicitly teach that the deposition of the amphiphilic compound can be performed at a vacuum pressure of  $1 \times 10^{-6}$  Pa. However, Arora does teach that vacuum deposition at pressures of  $1 \times 10^{-7}$  to  $1 \times 10^{-11}$  torr (i.e.,  $1.33 \times 10^{-5}$  to  $1 \times 10^{-9}$  Pa) was well

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known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed the vacuum deposition at any pressure between  $1 \times 10^{-7}$  to  $1 \times 10^{-11}$  torr, including the claimed pressure, with a reasonable expectation of success because Arora teaches that such pressures were operable for vacuum deposition. Additionally, where the principle difference between the claimed process and that taught by the reference is a temperature difference, it is incumbent upon applicant to establish criticality of that difference (see *Ex parte Khusid*, 174 USPQ 59). This decision is clearly analogous to pressure differences and other process parameters. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used any vacuum pressure in the deposition of the amphiphilic compound with a reasonable expectation of success.

4. Claims 21-22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori '003 in view of Anthony '040, Arora '007, and Schultz et al. (U.S. Patent No. 6,534,687).

Mori, Anthony, and Arora are discussed above, but do not explicitly teach that the amphiphilic compound can be a fatty acid having a chemical structure containing five to twenty carbon atoms. However, Schultz teaches that fatty acids can be amphiphilic substances (col. 1, lines 17-20) and that aluminum stearate and zinc stearate are suitable fatty acids (col. 9, lines 4-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used aluminum stearate or zinc stearate as the particular amphiphilic compound of Mori, Anthony, and Arora with a reasonable expectation of success.

5. Claims 21-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori '003 in view of Anthony '040, Arora '007, and Dattagupta et al. (U.S. Patent No. 5,711,964).

Mori, Anthony, and Arora are discussed above, but do not explicitly teach that the amphiphilic compound can be a fatty acid having a chemical structure containing five to twenty carbon atoms. However, Dattagupta teaches that sodium oleate is a well-known amphiphilic compound. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used sodium oleate as the particular amphiphilic compound of Mori, Anthony, and Arora with a reasonable expectation of success.

### ***Response to Arguments***

6. Applicant's arguments filed 2/7/2008 have been fully considered but they are not persuasive.

Applicant argues on pg. 7 that Mori fails to anticipate the feature of long elastic hydrocarbon chain as being able to act as a spring that minimizes any damage induced by different expansion coefficients between the organic buffer layer and the metal layer. However, the combination of references suggest a similar material used in a similar method and, thus, such a material would necessarily perform all the same functions.

Applicant argues on pg. 8 that there must be something in the references that suggests the combination or the modification. However, the teachings of Mori would have suggested to one of ordinary skill in the art that some sort of adhesion promoter is necessary between the electrode and the organic layer. Additionally, one of ordinary skill in the art would have recognized that compounds other than the specific materials as taught by Mori would be suitable so long as the adhesion promoter layer can enhance the adhesion between a hydrophobic surface and a hydrophilic surface.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shi et al. (U.S. Patent No. 5,902,677), Gorsuch et al. (U.S. Patent No. 5,888,662), and Tang (U.S. Patent No. 4,356,429) teach the need for a buffer layer in an EL device.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792